IN THE CLAIMS:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (New) A semiconductor device manufacturing method comprising the steps of:

generating a film forming gas by using any one of a silicon-contained organic compound having a siloxane bond and a silicon-contained organic compound having a CH_3 group and in addition H_2O, setting a flow rate ratio of H_2O to the silicon-contained organic compound to 4 or more, and adjusting a gas pressure to 1.5 Torr or more;

applying a power to the film forming gas to generate a plasma thereof so as to react it, and thus forming a low-dielectric insulating film on a substrate;

generating a process gas containing at least any one of He, Ar, H_2 and deuterium;

generating a plasma by applying a power to the process gas; and

bringing the low-dielectric insulating film into contact with the plasma of the

process gas.

35. (New) A semiconductor device manufacturing method according to claim 34, wherein the step of bringing the low-dielectric insulating film into contact with the plasma of the process gas is followed by the further step of:

removing a surface layer of the low-dielectric insulating film.

36. (New) A semiconductor device manufacturing method according to claim 35, wherein the step of removing the surface layer of the low-dielectric insulating film is followed by the further subsequent step of:

increasing a temperature of the low dielectric insulating film to 375 °C or more at an atmospheric pressure or a low pressure, and then bringing the low-dielectric insulating film into contact with a process gas having a CH_3 group, while the low-dielectric insulating film is not brought into contact with an atmosphere.

37. (New) A semiconductor device manufacturing method according to claim 34, wherein C_xH_y (x, y are a positive integer), $C_xH_yF_z$ or $C_xH_yB_z$ (x, y are 0 (where, except the case x=y=0) or a positive integer, z is a positive integer) is added to the film forming gas.

38. (New) A semiconductor device manufacturing method according to claim 34, wherein wirings or electrodes consisting mainly of a copper film are formed on the substrate.

39. (New) A semiconductor device manufacturing method comprising the steps of:

generating a film forming gas by using any one of a silicon-contained organic compound having a siloxane bond and a silicon-contained organic compound having a CH_3 group and in addition H_2O, setting a flow rate ratio of H_2O to the silicon-contained organic compound to 4 or more, and adjusting a gas pressure to 1.5 Torr or more;

applying a power to the film forming gas to generate a plasma thereof so as to react it, and thus forming a low-dielectric insulating film on a substrate; and

annealing the low-dielectric insulating film in an atmosphere of a nitrogen gas or an inert gas at a temperature of 400 °C or more.

40. (New) A semiconductor device manufacturing method according to claim 39, wherein the step of annealing the low-dielectric insulating film is followed by the further step of:

removing a surface layer of the low-dielectric insulating film.

41. (New) A semiconductor device manufacturing method according to claim 40, wherein the step of removing the surface layer of the low-dielectric insulating film is followed without bringing the low-dielectric insulating film into contact with an atmosphere by the further subsequent step of:

increasing a temperature of the low-dielectric insulating film to 375 °C or more at an atmospheric pressure or a low pressure, and then bringing the low-dielectric insulating film into contact with a process gas having a CH_3 group.

42. (New) A semiconductor device manufacturing method according to claim 34, wherein C_xH_y (x, y are a positive integer), $C_xH_yF_z$ or $C_xH_yB_z$ (x, y are 0 (where, except the case x=y=0) or a positive integer, z is a positive integer) is added to the film forming gas.

43. (New) A semiconductor device manufacturing method according to claim 34, wherein wirings or electrodes consisting mainly of a copper film are formed on the substrate.

44. (New) A semiconductor device manufacturing method comprising the steps of:

generating a film forming gas by using any one of a silicon-contained organic compound having a siloxane bond and a silicon-contained organic compound having a CH_3 group and in addition H_2O, and setting a flow rate ratio of H_2O to the silicon-contained organic compound to 12 or more;

increasing a temperature of a substrate up to 200 °C or more but 400 °C or less; and

applying a power to the film forming gas to generate a plasma thereof so as to react it, and thus forming a barrier insulating film on the substrate whose temperature is raised.

45. (New) A semiconductor device manufacturing method according to claim 44, wherein, in the step of generating the film forming gas, a pressure of the film forming

gas is adjusted to below 1.0 Torr and, in the step of forming the barrier insulating film, a power of a frequency of below 1 MHz is applied to the substrate to bias the substrate and to generate a plasma of the film forming gas by the power of the frequency of below 1 MHz so as to react it, and thus the barrier insulating film is formed.

46. (New) A semiconductor device manufacturing method according to claim 44, wherein, in the step of generating the film forming gas, a pressure of the film forming gas is adjusted to below 1.0 Torr and, in the step of forming the barrier insulating film, a power of a frequency of below 1 MHz is applied to the substrate to bias the substrate while at least the power of the frequency of 1 MHz or more out of the power of the frequency of below 1 MHz or the power of the frequency of 1 MHz or more is applied to the film forming gas, whose pressure is adjusted to 1.0 Torr or more, to generate a plasma thereof so as to react it, and thus the barrier insulating film is formed.

47. (New) A semiconductor device manufacturing method according to claim 44, wherein dinitrogen monoxide (N_2O) is added, or nitrogen (N_2) or ammonia (NH_3) is added, or dinitrogen monoxide (N_2O) and ammonia (NH_3) are added to the film forming gas.

48. (New) A semiconductor device manufacturing method according to claim 44, wherein C_xH_y (x, y are a positive integer), $C_xH_yF_z$ or $C_xH_yB_z$ (x, y are 0 (where, except the case x=y=0) or a positive integer, z is a positive integer) is added to the film forming gas.

49. A semiconductor device manufacturing method according to claim 44, wherein wirings or electrodes consisting mainly of a copper film are formed on the substrate.

50. A semiconductor device manufacturing method comprising the steps of:

generating a film forming gas by using any one of a silicon-contained organic compound having a siloxane bond and a silicon-contained organic compound having a CH_3 group and H_2O, and setting a flow rate ratio of H_2O to the silicon-contained organic compound to 12 or more;

adjusting a pressure of the film forming gas to below 1.0 Torr;

increasing a temperature of a substrate up to 200 °C or more but 400 °C or less;

applying a power of a frequency of below 1 MHz to the substrate to bias the substrate and to generate a plasma of the film forming gas by the power of the frequency of below 1 MHz so as to react the plasma, and thus forming a first insulating film;

generating the film forming gas;

adjusting a pressure of the film forming gas to 1.0 Torr or more;

increasing a temperature of a substrate up to 200 °C or more but 400 °C or less; and

applying a power of a frequency of below 1 MHz to the substrate to bias the substrate while applying at least the power of the frequency of 1 MHz or more out of the power of the frequency of below 1 MHz or the power of the frequency of 1 MHz or more to the film forming gas, whose pressure is adjusted to 1.0 Torr or more, to generate a

plasma thereof so as to react it, and thus forming a second insulating film on the first insulating film, whereby the barrier insulating film composed of the first insulating film and the second insulating film is formed.

51. (New) A semiconductor device manufacturing method according to claim 50, wherein dinitrogen monoxide (N_2O) is added, or nitrogen (N_2) or ammonia (NH_3) is added, or dinitrogen monoxide (N_2O) and ammonia (NH_3) are added to the film forming gas.

52. (New) A semiconductor device manufacturing method according to claim 50, wherein C_xH_y (x, y are a positive integer), $C_xH_yF_z$ or $C_xH_yB_z$ (x, y are 0 (where, except the case x=y=0) or a positive integer, z is a positive integer) is added to the film forming gas.

53. (New) A semiconductor device manufacturing method according to claim 50, wherein wirings or electrodes consisting mainly of a copper film are formed on the substrate.